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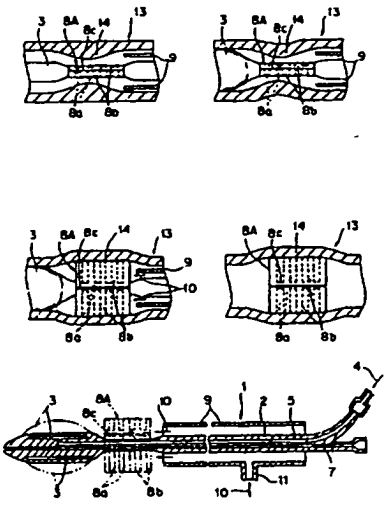
(54) **LIVING BODY ORGAN DILATOR AND CATHETER**

(57) Abstract:

PURPOSE: To permanently dilate the constricted part of an organ by coating each of ring-shaped parts composed of a shape memory alloy with a flexible substance and connecting the ring- shaped parts by the flexible substance to constitute a cylindrical body.

CONSTITUTION: A cylindrical living body organ dilator 8A equipped with a shape memory alloy member, for example, composed of Ni-Ti is mounted to the main body 2 of a catheter 1 at a position slightly behind the balloon 3 provided to said main body 2. The catheter 1 is inserted in the coronary artery 13 on the side of the balloon 3. The catheter 1 is inserted in a blood vessel 13 up to the position of the constricted part thereof and a physiological saline solution 4 is sent in the catheter to inflate the balloon 3 which is, in turn, brought into close contact with the inner wall of the blood vessel to temporarily stop the flow of blood or body fluids. A physiological saline solution 10 controlled, for example, to a specified temp. of 50°C is sent in the catheter from the introducing port 11 of a sheath 9 to be led out toward the dilator 8A. The physiological saline solution heats the dilator 8A to the transition point thereof or higher to change the same to the dilated shape being the original shape. The constricted part 14 is dilated by the cylindrical dilator 8A and the physiological saline solution in the balloon 3 is drained to contract the balloon 3 and the catheter is pulled off. The dilator 8A is stayed in the blood vessel in such a state that the constricted part 14 is dilated.



(Translation)

Reference (E)

Japanese Patent Laid-open Publication SHO 63-214264

Title Apparatus For Treating Hypertrophy Of Prostate Gland

Disclosure Date September 6, 1988

Abstract;

The present apparatus for treating hypertrophy of a prostate gland has an axially elongated catheter (1) which has at least one lumen and an annular recess for receiving a stent (18). An expandable balloon is mounted on the catheter shaft in the recess to be in communication with the lumen.

The removably mounted, radially outwardly deformable stent (18) is coaxially disposed about the balloon and situated in the recess. The stent has an opening at each axial end thereof and a lumen extending through it. The stent is radially expandable to a preselected configuration and when not expanded, has an outer diameter not greater than that of the catheter shaft.

The stent is manufactured by machining a tubular member or a sheet member and cutting or etching a wall pattern, as shown in Figures 6 or 8.

(Translation)

Reference (G)

Japanese Utility Model Laid-open Publication HEI 04-25755

Title Repeatedly Usable Stent

Disclosure Date February 28, 1992

Abstract;

The object of the present invention is to provide a stent which is capable of being introduced into a patient repeatedly after it is removed from a catheter sheath.

The present stent comprises at least two cylindrically shaped wires 1 connected to each other. Each of the wires 1 is shaped into a ring configuraton in such a way that one end of each of the wires 1 is connected to the other end thereof. Each of the wires 1 has a corrugated shape and narrow sections 2 are formed at respective peak portions thereof. The respective bottom portions of one of the wires 1 are connected to the corresponding top portions of the other of the wires 1 through straight wires 6. Each straight wire 6 includes two small rings 3 at its respective ends. These small rings 3 can easily engage respective narrow sections 2.

According to the present stent, even if the stent is disposed at a bent portion of the patient's vessel, it can prevent the bent portion from being clogged. Further, the connection of each wires 1 by the straight wires 6 enables the stent to be disposed repeatedly within the patient's body as the occasion demands.

Reference (B)

Japanese Patent Laid-open Publication HEI 02-255157

Title New Appliance For Expanding Bodily Organs

Disclosure Date October 15, 1990

Abstract;

New appliance for expanding organs of body is made of shape memory sheet of shape memory resin of shape-restoring temp. of 20-70 deg.C which has been memorised with cylindrical expanded shape. Another new appliance is made of the sheet comprising laminated sheet comprising shape memory resin sheet and flexible sheet which has been memorised with cylindrical expanded shape. Sheet optionally has holes. New device for expanding body organs is catheter mounted with appliance in cylindrically reduced form, at its tip. It has lumen for water flow to adjust temp. which lumen is communicated with outlet around appliance-mounted position. Catheter preferably has balloon adjacently before or after the position, and lumen for fluid passage is communicated with balloon. Another new device comprises outer tube sheath with built-in string or inner tube mounted with appliance in reduced form, in slidable form. Device preferably has balloon and lumen adjacently before or after mounted position. Cylindrical reduced form is preferably formed by winding sheet without changing axial dimension of expanded shape.

(Translation)

Reference (F)

Japanese Patent Laid-open Publication SHO 58-501458

Title Device For Dilating Vascular Tissue

Disclosure Date September 1, 1983

Abstract;

A shown in Figure 17, a device for dilating vascular tissue according to the present invention comprises a helical spring (36) which can be expanded radially by rotating its ends (38,39) relative to one another. The end (38) of the spring is attached to a shaft (42a) mounted axially within the spring. The end (39) is attached to a sleeve (42b) which covers the spring and the shaft. The proximal end of the shaft has a a rotatable knob (44) carried thereon and the proximal end of the flexible sleeve (42b) has a second knob (43), spaced form the knob (44), carried thereon.

By rotating the knobs the number of spring turns and the pitch of the turns can be changed. In order to fix the helical spring (36), which is preferably of a band shape, in the vessel of the patient, the helical spring (36) can be perforated by stamping it or by using a laser.

Reference (A)

Japanese Patent Laid-open Publication HEI 02-174859

Title Expandable Intraluminal Graft

Disclosure Date July 6, 1990

Abstract;

The graft comprises a number of thin-walled tubular members, each having first and second ends and a wall surface disposed between the first and second ends. The wall surface have a uniform thickness and a number of slots disposed parallel to the longitudinal axis of each tubular member. A single connector member is disposed between adjacent tubular members to flexibly connect adjacent tubular members, and in parallel relationship with respect to the longitudinal axis of the tubular members and coplanar with each tubular member.

Each tubular member have a first diameter which permits intraluminal delivery of the tubular members into a body passageway having a lumen and a second, expanded and deformed diameter, upon the application from the interior of the tubular members of a radially, outwardly extending force. The second diameter is variable and dependent upon the amount of force applied to the tubular members and the tubular members may be expanded and deformed to expand the lumen of the body passageway.